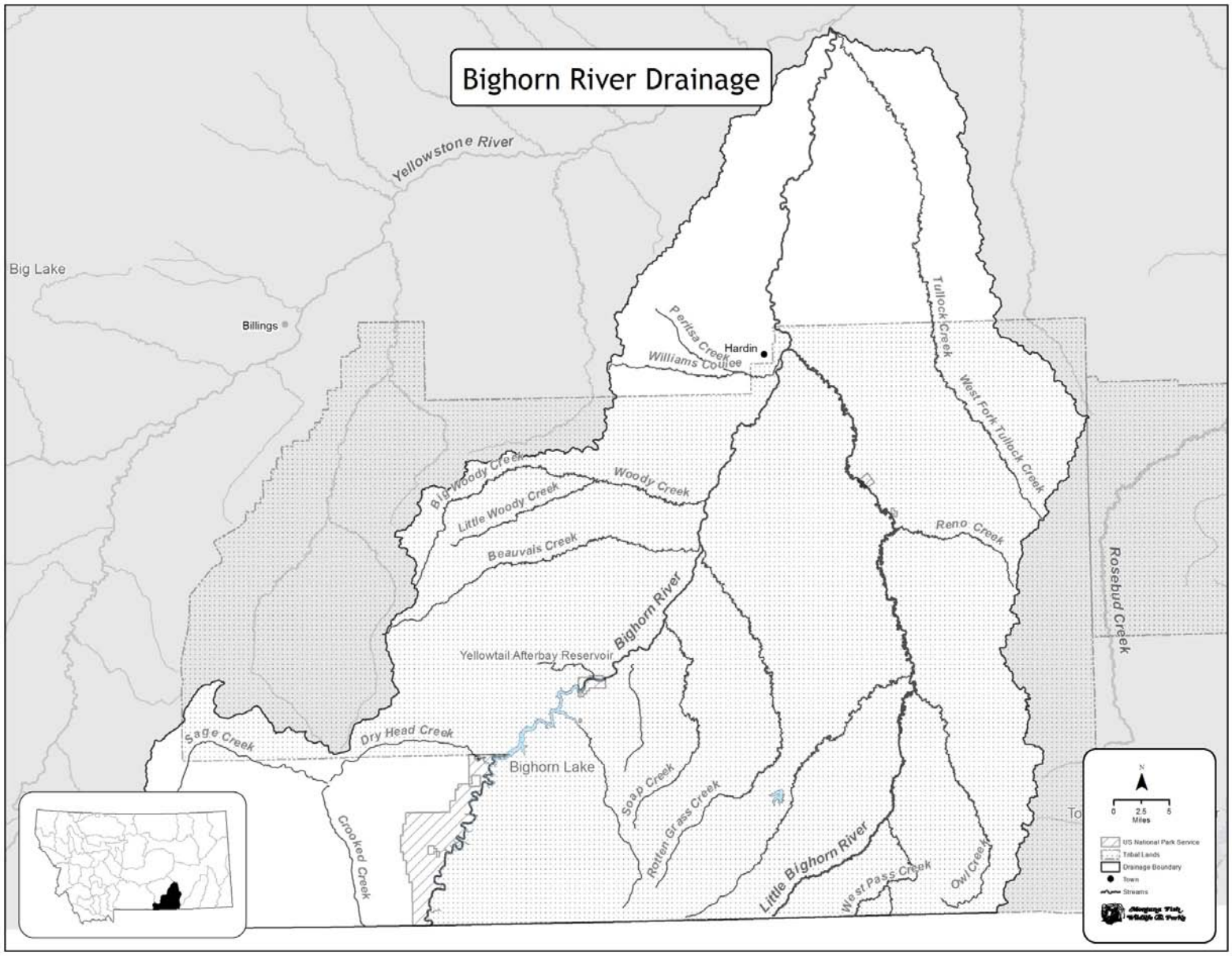
Bighorn River Drainage
Yellowstone River
Big Lake
Billings
Hardin
Perkins Coulee
Williams Coulee
Tullock Creek
West Fork Tullock Creek
Big Woody Creek
Woody Creek
Little Woody Creek
Beauvais Creek
Reno Creek
Rosebud Creek
Bighorn River
Yellowtail Afterbay Reservoir
Sage Creek
Dry Head Creek
Bighorn Lake
Crooked Creek
Soap Creek
Rotten Grass Creek
Little Bighorn River
West Pass Creek
Owl Creek
N
0 2.5 5
Miles
US National Park Service
Tribal Lands
Drainage Boundary
Town
Streams

# BIGHORN RIVER DRAINAGE

## PHYSICAL DESCRIPTION

The water source for the Bighorn River (and its major tributary the Little Bighorn River) begins in Wyoming in the Wind, Shoshone, and Bighorn mountain ranges before entering Montana, where it also receives water draining from the Bighorn Mountains as well as the Pryor Mountains. The Montana portion of the drainage includes a portion of the Shoshone River drainage which drains the south face of the Pryor Mountains (primarily the Sage Creek watershed) and flows into Wyoming, but in turn enters Bighorn Lake in Wyoming. Land ownership in this drainage includes private, Custer National Forest, the Crow Tribe Reservation, BLM, and State of Montana land.

Yellowtail Dam impounds the Bighorn River to form Bighorn Lake, which is the largest body of water in the watershed. This reservoir supports a popular recreational fishery that includes a diverse assemblage of native and nonnative species. Tributaries to the Bighorn River in Montana above the dam include Dry Head, Hoodoo, Pitchfork, Spring, Black Canyon, Big Bull Elk, Little Bull Elk, Porcupine, and Crooked creeks.

The lower Bighorn River begins at Yellowtail Dam, and enters the Yellowstone River 86 miles downstream. Tributary streams of the lower Bighorn River include the Little Bighorn River, Rotten Grass Creek, Soap Creek and War Man Creek. Currently, the Bighorn Canal captures the entire flow of War Man Creek within about one mile of its confluence with the river. Lime Kiln Creek is a small stream that enters the Bighorn River just below Yellowtail Dam. Grapevine Creek is an 8-mile long tributary of the Bighorn River that joins the river downstream of Yellowtail Dam.

## FISHERIES MANAGEMENT

The Crow Reservation covers a large portion of this drainage. Within the Reservation boundary, the State of Montana has the authority to manage Bighorn Reservoir, Afterbay Dam, and the Bighorn River proper. The Crow Tribe is responsible for management of all other waters within the reservation boundary. Management of tribal waters isnot described in this document, except to reference a Memorandum of Understanding that the Crow tribe, , several federal agencies, and FWP signed, agreeing to work together to restore Yellowstone cutthroat trout populations in the Bighorn and Pryor mountain ranges.

Completion of Yellowtail Dam altered the fisheries potential of the Bighorn River. Historically, this river supported a warmwater assemblage of riverine species. The hypolimnetic release of cold, clear, nutrient-rich water now supports a world-class tailwater fishery for rainbow and brown trout. The Bighorn River rainbow and brown trout fishery is found from Fort Smith to Hardin. The Bighorn River fishery downstream of Hardin transitions into smallmouth bass, walleye, sauger, burbot, and channel catfish fishing. Bighorn Reservoir, created by Yellowtail Dam, provides substantial fishing opportunity for smallmouth bass, walleye, sauger, perch, crappie, brown trout, rainbow trout, and burbot. Mountain streams in the Bighorn and Pryor mountains provide fishing opportunity for cutthroat trout, rainbow trout, brown trout and brook

trout. Smaller streams in this reach under FWP management are essentially warm water prairie streams that provide habitat for native minnow communities.

Walleye and sauger management changes are being experimentally implemented in Bighorn Reservoir because of a genetically unique population of sauger in the Wyoming portion of the Bighorn River. In an effort to reduce potential hybridization between these sauger and walleye, FWP initiated stocking sterile walleye (with greater than 90% triploidy) into the reservoir. Additionally, sauger are being spawned in Wyoming and reared at Miles City State Fish Hatchery to be stocked in the lower portion of the Bighorn Reservoir in an attempt to increase abundance of sauger and improve angler catch rates and satisfaction.

Crooked Creek and Piney Creek contain the last aboriginal Yellowstone cutthroat trout in areas managed by FWP in the Pryor Mountains. A few populations of cutthroat can also be found in the Pryor and Bighorn Mountains within the Crow Reservation. A memorandum of understanding is in place with the Crow Tribe, BLM, USFS, USFWS, and FWP to recover cutthroat and to assist each other when possible for restoration projects. Sage Creek was a recent cooperative interagency project where brook trout and rainbow trout were removed and replaced with cutthroat. Currently the agencies and the Crow Tribe are in the process of confirming that this project was completed successfully. This fishery will be managed as a recreational fishery with harvest allowed.

The Bighorn River drainage falls under the Central District fishing regulations. Bighorn Reservoir regulations are developed cooperatively between FWP and the Wyoming Game and Fish Department. This cooperation helps to keep the regulations similar in both states for the same water body. Regulations differ from the Central District standards for bass, shovelnose sturgeon, sauger, walleye, catfish, and ling in Bighorn Reservoir. The Bighorn River regulations have specific sauger regulations that differ from the standard regulation. Other regulation exceptions include Crooked Creek and Piney Creek, which allow catch and release for cutthroat trout only. Cutthroat in Crooked Creek and Piney Creek are aboriginal, and efforts have been made to maintain and improve these conservation populations of cutthroat. The stream and river fisheries in Pryor Creek, Sage Creek, and Bighorn River are open all year.

**HABITAT**

The Bighorn River has been the center of water management disputes between Wyoming and Montana stakeholders for nearly a decade. Criteria for water releases from the dam were developed to support the trout fishery downstream in the Bighorn River, and recommendations for reservoir elevations were advocated by the National Park Service and the State of Wyoming. New operating criteria were developed using computer models to improve transparency of water management by the BOR and to better understand hydrologic limitations imposed by varying water supply, reservoir storage, and dam discharge. Operational rules set reservoir drawdown and refill targets based on the shape and volume of inflows, and scheduled dam discharges to balance the often conflicting requirements for fish and recreation in the reservoir and river downstream. Rule curves were designed to reduce reservoir drawdown and improve refill, and optimize river flows (reduce duration of low flows and duration and magnitude of high flows) to benefit the fisheries in the Bighorn River downstream of the dam. It is not possible to prevent all extreme high or low water conditions in either the river or reservoir because of forecasting error and natural variability in annual water supply from snow melt and unpredictable rainfall events.

Side channel habitat in the Bighorn River has been declining since the dam was put in place in 1967 due to lack of high spring flows and sedimentation. A study by the BOR determined the river bed was not substantially degrading, and the side channels were essentially being plugged with sediment at the heads of the channels with subsequent vegetation growth holding the sediment in place. Some channel heads have been identified for excavation with one completed in 2012.

Several habitat projects have been completed recently in tributary systems. A fish barrier to prevent brown trout from occupying Yellowstone cutthroat habitat and range was put in place in Crooked Creek in 2008. A small private irrigation reservoir on Piney Creek was improved by restoring volume and altering water withdrawal from an open pipe to a kettle system, which reduced fish loss to irrigation as well as improved pool habitat. Additionally the BLM placed logs in Piney Creek to improve substrate and cover habitat. Efforts have been made to ensure culverts and other bank projects in Sage Creek are sized and placed properly to maintain fish passage in the upper watershed.

### FISHING ACCESS

FWP manages seven FASs along the Bighorn River: Manuel Lisa, General Custer, Grant Marsh, Arapooish, Two Leggins, Mallards Landing, and Bighorn. Because of the popularity of the Bighorn River, additional FASs could improve access and reduce crowding. Two areas of particular interest would be to develop an additional access between Three Mile and Bighorn FASs, and to develop an access near the St. Xavier Bridge.

The Bighorn Canyon National Recreation Area managed by the National Park Service manages access for the river at Three Mile (Lind Access) and Afterbay Dam. Additionally the Park Service manages 2 boat ramps on Bighorn Reservoir at Ok-a-beh, and Barry's Landing in Montana as well as 1 boat ramp on the Afterbay Reservoir. Access is also available in Wyoming for Bighorn Reservoir at Horseshoe Bend. Several more remote access locations managed by the Forest Service and the BLM allow for access on many streams in this management area. Lodge Grass Reservoir provides opportunity for tribal and non-tribal members but it is managed by the Crow Tribe.

### SPECIAL MANAGEMENT ISSUES

Fishing contests occur on Bighorn Reservoir for bass, walleye, and carp on. The Bighorn River supports an annual basis an extensive outfitting and guiding industry. The upper 13 miles on the Bighorn River is restricted to non-motorized boats to reduce conflicts between drift boaters and floaters and powered water craft. Several streams in this management area support conservation populations of Yellowstone Cutthroat.

## FISHERIES MANAGEMENT DIRECTION FOR THE BIGHORN PRYOR RIVER DRAINAGE

| Water | Miles/acres | Species | Origin | Management Type | Management Direction |
|---|---|---|---|---|---|
| Bighorn Reservoir (Yellowtail Reservoir) | 17,300 acres | Sauger | Wild/Hatchery | Put-Grow-Take/ Conservation | Supplemental stocking on experimental basis 2013-2016 in lower reservoir as an effort to improve catch and harvest rates for anglers |
| | | Walleye | Hatchery/ Wild | Put-Grow-Take/ Quality | Stock only 90%+ triploid fingerling in effort to reduce potential risk for hybridization with unique and pure sauger in the Upper Bighorn River. Provide opportunity to catch walleye with trophy opportunity. |
| | | Smallmouth bass, Yellow perch, Crappie, Brown trout, Channel catfish, Burbot, Carp | Wild | General | Monitor populations over time; rely solely on natural reproduction. |
| | | Rainbow trout | Hatchery | Put-Grow-Take | Monitor populations as necessary. |
| | | Native suckers and minnows | Wild | General | Monitor populations as necessary. |
| Habitat needs and activities: Make recommendations to BOR for lake elevation management, evaluate sauger and walleye stocking programs. | | | | | |

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| Water | Miles/acres | Species | Origin | Management Type | Management Direction |
|---|---|---|---|---|---|
| Sage Creek | 62 miles | Yellowstone cutthroat trout | Wild | Conservation | Establish a fishable population under standard Central District fishing regulations following brook trout removal in 2010-2011. |
| | | Long nose dace, Lake chub, Fathead minnow | Wild | Conservation | Ensure these species re-establish following brook trout removal in 2010-2011 |
| | | Prairie fish assemblage | Wild | General | Maintain populations. Evaluate feasibility of this becoming a source of certified live bait for Bighorn Lake anglers. |
| Habitat needs and activities: Currently in the process of removing non-native trout and re-establishing cutthroat. Water goes sub-surface frequently once the creek reaches Bowler Flats, several in-channel dams provide refuge for minnow and sucker species, consider efforts to improve habitat. Sage Creek may need some habitat improvement for spawning areas as well as riparian fencing. | | | | | |
| Bighorn Reservoir tributaries (Piney Creek, Dry Head Creek Crooked Creek) | 33 miles | Yellowstone cutthroat trout | Wild | Conservation/Special Regulations | Aboriginal populations, no harvest allowed |
| | | Brown trout (Crooked Creek below barrier) | Wild | General/Suppression | Consider reducing or eliminating this and other trout species in the reach from the barrier to the reservoir, and replacing with cutthroat. Most of the reach is in Wyoming and would require a coordinated effort. |
| Habitat needs and activities: Riparian protection needed as many areas in the Pryor Mountains are overgrazed; many road projects could jeopardize trout populations with perched culverts and increased erosion from road work. Barrier placed in Crooked Creek 2008 may need occasional repair, Habitat improvements in Piney Creek need to be maintained. | | | | | |
| Afterbay Reservoir | 176 acres | Rainbow trout | Hatchery/ Wild | Put-Grow-Take | Stock in years when full drawdown isn't conducted. Drawdown is done every 3 years by BOR to evaluate seeps from dam. |
| Habitat needs and activities: this is a re-regulation reservoir with the potential for 15 vertical feet of elevation change daily, which is a limiting factor to do any substantial fishery management. | | | | | |
| Bighorn River - Downstream of Yellowtail Reservoir | 84 miles | Sauger | Wild | Conservation/Special Regulations | Maintain reduced harvest limits, better understand genetic composition. Investigate opportunities for sauger population improvement in the lower river. |
| | | Channel Catfish | Wild | General | Manage as a recreational fishery. |

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| Water | Miles/acres | Species | Origin | Management Type | Management Direction |
|---|---|---|---|---|---|
| | | Burbot | Wild | General | Evaluate population to determine status. |
| | | Mountain Whitefish | Wild | General | Manage as a recreational fishery. |
| | | Rainbow Trout, Brown Trout, Walleye, Smallmouth Bass | Wild | General | Manage as a recreational fishery. |
| | | Native non-game species | Wild | General | Improve documentation of abundance and distribution during standard and other sampling efforts. |
| Habitat needs and activities: Side channel restoration to maintain habitat diversity in the Bighorn to support a variety of fish sizes and species. Flow management activities will be required to ensure the fishery is provided adequate water to maintain the fishery. Gas super saturation in upper river is a recurring problem, look for ways to reduce the cause work with BOR and WAPA to reduce severity if possible. Increased bank stabilization work negatively influences riverine habitats, work with Conservation District and private landowners to find sustainable ways to protect the fishery and property. | | | | | |
| Arapooish Pond | 27 acres | Largemouth bass | Hatchery | General | Occasional re-stocking after winterkills |
| | | Carp, Native suckers, Bullheads, Minnows | Wild | General | Fish from the Bighorn River were able to access the pond during flooding in 2011. May need to address in the future if bass are impacted. |
| Habitat needs and activities: Lake is supported with aeration system to reduce frequency of winterkill, but with more depth the need for air pumps could be eliminated. | | | | | |